REMARKS

Applicant previously cancelled claims 34-46 and added claims 47-66. Claims 47, 62 and 61 have been amended. Claims 67-75 have been added. Claims 47-75 are pending in the present application, of which claims 47, 52, 61 and 67 are independent. Applicant believes that the present application is in condition for allowance, which prompt and favorable action is respectfully requested.

I. CLAIM AMENDMENTS

Claim 47 has been amended to clarify which of the symbol streams are detected and which are decoded. The amendments to claim 47 are merely for clarification and do not change the scope of claim 47.

Claims 52 and 61 have been amended by replacing "information indicative of" a channel state information parameter with "an effective" channel state information parameter, as will be described more fully below.

Claims 67-75 are computer readable medium claims have similar scope as method claims 47-51.

II. REJECTION UNDER 35 U.S.C. §102 REGARDING ZHUANG ET AL.

The Office Action states that claims 47-51 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent Pub. No. 20030112745 by Zhuang et al. The rejection is respectfully traversed in its entirety.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), *citing* 35 U.S.C. §102. *See also* MPEP § 2131.

Zhuang teaches interleaving encoded bits before mapping the encoded bits to modulation symbols in an OFDM communication system. The interleaving is done in the frequency domain giving rise to additional frequency diversity. See Zhuang at paragraphs 13 – 17. Several codes are discussed for achieving optimal frequency diversity, and Bit-Interleaved Coded Modulation

(BICM) "is of particular interest because it provides the largest diversity factor among [the codes discussed]." Zhuang at paragraph 15.

Referring to claim 47, the Applicant claims, among other things:

> "a first processor configured to process the plurality of received symbol streams and to provide a plurality of detected symbol streams, **one detected symbol stream for each stage of a successive interference cancellation processing**; and a second processor configured to process each detected symbol stream to provide a corresponding decoded data stream and to determine a received signal-to-noise-and-interference ratio (SNR) and **an effective SNR for each of the plurality of detected data streams based on the received SNR**". (Emphasis added.)

The **effective** SNR is not the same as a **received** SNR. The effective SNR may be based on improved processing results from successive interference cancellation (SIC) processing. "The effective SNR for each data stream is ... determined based on the received SNR and successive interference cancellation processing at the receiver." Specification at paragraph 1009

Contrarily, Zhuang does not teach or suggest the claimed:

> a first processor configured to process the plurality of received symbol streams and to provide a plurality of detected symbol streams, **one detected data stream for each stage of a successive interference cancellation processing**; and a second processor configured to process each detected symbol stream to provide a corresponding decoded data stream and to determine a received signal-to-noise-and-interference ratio (SNR) and **an effective SNR for each of the plurality of detected data streams** based on the received SNR". (Emphasis added.) See claim 47.

The Office Action cited Zhuang at paragraphs 25, 28 and 30 to support the assertion that Zhuang allegedly teaches or suggests "a first processor configured to process the plurality of received symbol streams and to provide a plurality of detected symbol streams, **one detected data stream for each stage of a successive interference cancellation processing**" as claimed in claim 47. (Emphasis added.) Zhuang contemplates that SIC processing could be used in conjunction with the interleaving of encoded bits, which is the primary thrust of Zhuang.

However, Zhuang does not teach or suggest determining an effective SNR based on the SIC processing, as will be discussed below.

The Office Action cited Zhuang at paragraphs 25-34 and 38 to support the assertion that Zhuang allegedly teaches or suggests "a second processor configured to process each detected symbol stream to provide a corresponding decoded data stream and **to determine** a received signal-to-noise-and-interference ratio (SNR) and **an effective SNR** for each of the plurality of detected data streams based on the received SNR" as claimed in claim 47. (Emphasis added.) Zhuang does not mention an effective SNR for any stage, let alone for each stage, of successive interference cancellation. As stated above, Zhuang does contemplate SIC processing, but the SIC processing does not result in an effective SNR calculation as claimed in claim 47. Zhuang states "[t]he receive array processor 328 may produce array processor output symbols 317 that may be used to compute symbol metrics and then to generate bit metrics 305. Bit metrics may be derived from symbol metrics as is known in the art." Paragraph 25, at page 3, col. 1, lines 4-8. Thus, Zhuang is focused on obtaining bit metrics. SNR is a symbol metric. Thus, even though Zhuang mentions symbol metrics, Zhuang does not teach or suggest determining any different types of SNR.

Zhuang does not even disclose any specific SNR, let alone an effective SNR. Still further, Zhuang does not teach or suggest determining an effective SNR based on, or as part of, SIC processing. Accordingly, Zhuang does not expressly or inherently describe the claimed "a first processor configured to process the plurality of received symbol streams and to provide a plurality of detected symbol streams, one detected data stream for each stage of a successive interference cancellation processing" at claim 47. Further, Zhuang does not teach or suggest "a second processor configured to process each detected symbol stream to provide a corresponding decoded data stream and to determine a received signal-to-noise-and-interference ratio (SNR) and an effective SNR for each of the plurality of detected data streams based on the received SNR" at claim 47.

Accordingly, claim 47, and claims 48-51, which depend from claim 47, are patentable for at least the reasons described above.

III. REJECTION UNDER 35 U.S.C. §102 REGARDING VAN NEE.

The Office Action states that claims 52-66 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent Pub. No. 20030112745 by Zhuang et al. The rejection is respectfully traversed in its entirety.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), *citing* 35 U.S.C. §102. *See also* MPEP § 2131.

Van Nee teaches "the dynamic control circuitry 47 can control the decoding block 52 to dynamically change the decoding rate and/or the demodulation scheme, thereby dynamically changing the operating parameters and/or characteristics, such as the data rate." Col. 7, lines 35 to 39. Thus, van Nee contemplates adapting operating parameters to channel conditions. In fact, the channel conditions may include a channel state information parameter and may even be specifically a SNR. However, van Nee does not teach or suggest using an **effective** channel state information parameter. Further, van Nee does not distinguish between different types of channel state information parameters.

Referring to claim 52, the Applicant has amended claim 52 to claim, among other things, "comparing the required channel state information parameter for each data stream against **an effective channel state information parameter** for the data stream". (Emphasis added.)

Accordingly, the rejection with respect to claims 52-66 is moot.

The Applicant claims **effective** channel state information. As was described above in the context of SNR, an **effective** channel state information parameter is not the same as a channel state information parameter. The effective channel state information parameter is based on improved processing results from error correction, SIC processing, or other techniques.

Contrarily, van Nee does not teach or suggest the claimed "comparing the required channel state information parameter for each data stream against **an effective channel state information parameter** for the data stream" of claim 52. (Emphasis added.)

Van Nee merely describes changing coding/decoding rate and demodulation scheme responsive to channel conditions. Nowhere does van Nee suggest calculating or using an effective channel state information parameter. Using an effective channel state information

parameter implies calculating or otherwise deriving the effective channel state information parameter differently from an actual or received channel state information parameter. Van Nee does not suggest the use of an effective channel state information or give any hint as to how such an effective channel state information parameter could be calculated.

Accordingly, claim 52, and claims 53-60, which depend from claim 52, are patentable for at least the reasons described above.

Claim 61 is a means-plus-function apparatus claim with similar scope to method claim 52. Accordingly, claim 61 and claims 62-66, which depend from claim 61, are patentable for at least the reasons described above with respect to claim 52.

Claim 67 is a computer readable medium claim with similar scope to method claim 52. Accordingly, claim 67 and claims 68-75, which depend from claim 67, are patentable for at least the reasons described above with respect to claim 52.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

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